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A COMPREHENSIVE REVIEW OF LAUHA KALPA IN THE MANAGEMENT OF UDARASHOOLA: PHARMACEUTICAL PERSPECTIVES AND PROBABLE MECHANISMS OF ACTION

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ABSTRACT

Introduction: Rasa Shastra, a specialized branch of Ayurveda, employs processed metals and minerals for therapeutic purposes. Lauha Kalpa, formulations containing Lauha Bhasma as the principal ingredient, are traditionally indicated in various gastrointestinal disorders, including Udarashoola. However, a comprehensive review of these formulations in the context of abdominal pain is lacking. Present efforts were made to understand Lauha Kalpa described in Rasayoga Sagara text for the management of Udarashoola and related gastrointestinal pain disorders and to explore their probable mode of action.

Materials and Methods: A literary review was conducted using Rasayoga Sagara as the primary source to collect Lauha Kalpa bearing the prefix or suffix “Lauha” and indicated for Udarashoola, Shoola, Parinamashoola, Annadravashoola, Kukshishoola, and related gastrointestinal conditions were included. Collected data were analysed and probable mechanisms in Udarashoola were interpreted based on Ayurvedic principles and available scientific evidence.

Results: A total of 35 Lauha Kalpa indicated for Shoola-related disorders were identified. Churna was the most common dosage form, followed by Leha/Avaleha, Gutika, Paniya, and Parpati preparations. The proportion of Lauha Bhasma ranged from 0.9% to 99.99%, with many formulations containing approximately 50%. Triphala was the most frequently used adjuvant ingredient, while Ghrita and Madhu were the most commonly prescribed Anupana. The formulations were indicated in Shoola, Parinamashoola, Kukshishoola, Hridshoola, and associated disorders such as Amlapitta, Grahani, Mandagni, and Udararoga. Their therapeutic potential may be attributed to Deepana, Pachana, Vatanulomana, Pittashamaka, and also cytoprotective & prokinetic actions, which collectively support digestive function and pain relief.

Conclusion: Classical Ayurvedic literature describes numerous Lauha Kalpa specifically indicated for Udarashoola and related abdominal pain disorders. Their diverse pharmaceutical forms, targeted indications, and plausible therapeutic mechanisms highlight their potential role in gastrointestinal care, warranting further pharmacological and clinical investigation.

Keywords: Lauha Kalpa, Lauha Bhasma, Udarashoola, Shoola, Rasayoga Sagara.

INTRODUCTION

Rasa Shastra, a branch of Ayurveda that flourished during the medieval era, chiefly deals with the pharmaceutical processing and therapeutic use of metals and minerals in healthcare.¹ Many formulations containing processed metals like Lauha (Iron), Tamra (copper), Rajat (silver), Svarna (Gold), Yashad (Zinc), Vanga (Tin) etc. to eliminate various diseases.

Lauha Bhasma (calx of iron) is an Iron based, micro fine powder prepared through the Marana (Incineration) process of purified Lauha.² Lauha, when processed appropriately through Shodhana (Purification process), Marana (incineration), and Bhavana (Levigation) is described to possess Deepana, Pachana, and Shoolahara properties.³

Lauha Kalpa are the formulations of Lauha Bhasma as main ingredient added to other drugs.^{4,5} These formulations are used in many disease conditions such as Pandu (anemia), Arsha (hemorrhoids), Raktapitta (bleeding disorders), Shoola (pain in different origin), Jwara (fever), Yakrita Pliha Roga (disease of liver and spleen), Udara (dropsy), Amavata (rheumatic arthritis), Vatarakta (gout), Kushtha (skin disorders), Medoroga (Obesity), Kasa (cough), and Shwasa (dyspnoea).⁶

The digestive system is one of the biological systems that has been negatively impacted by the fast-paced, stressful and busy modern world (Annavaha Srotas). The term "Annavaha Srotas" refers to the path taken by food during transportation. Ajeerna, Ama-Visha creation, Annadravashoola and Parinamashoola are the next stages of the digestive process that are triggered by an intermediate product that is produced as a result of disturbance of the digestive fire.⁷ In the present context, Udarashoola is used as an umbrella term encompassing various forms of abdominal pain, including Shoola, Kukshi Shoola (pelvic pain), Annadrava Shoola (peptic ulcer), and Parinama Shoola (duodenal ulcer), which collectively represent different clinical manifestations and stages of digestive pathology.⁸ Lauha Kalpa may serve as a rational and effective Ayurvedic intervention for this condition.

However, a systematic scientific evaluation of Lauha Kalpa preparations in Shoola are few. Till date, no scientific comprehensive review has been done on Lauha Kalpa in Shoola. Hence, the present study has been undertaken to review Lauha Kalpa mentioned to be used in the management of Udarashoola and to understand its probable mode of action.

MATERIALS AND METHODS

The review has been made from the Rasayogasagara⁹ text and relevant research updates are studied from online sources. Here the review presented Lauha Kalpa that have prefix/suffix "Lauha" and only mentioned to be used in gastrointestinal disease conditions like Udarashoola, Shoola, Parinamashoola, Annadrava Shoola, Kukshi Shoola etc. Collected data were analysed through its composition, dose, anupana and dosage form. Probable mode of action on Udarashoola were drawn theoretically.

RESULTS

In Rasayogasagara, numerous Lauha Kalpa are described. A total of 35 formulations with the prefix/suffix 'Lauha' are mentioned in Shoola condition which are listed in Table 1.

Table 1: Details of Lauha Kalpa mentioned in Rasayogasagara

Sr. No.	Formulation Name	Anupana	Dose	Indication	Dosage Form	Reference
1	AmrutLauha	Ghrita, Madhu	1 masha – 1 Ratti (Max. 8 Masha)	Udarashoola, Amlapitta	Leha	Part-1 Akaradi Rasa/183
2	ErandaLauha	Ushna Jala	1 Masha	Shoola, Pleea	Churna	Part-1 Aakaradi Rasa/446
3	Krushnadya Lauha	Ghrita, Madhu	1 Masha	Parinama shoola	Leha	Part-1 Kakaradi Rasa/382
4	Chatuhsama Lauha	Narikela jala	1 Masha (Max. 8 Masha)	Hridshoola, Parshvashoola	Leha	Part-1 Chakaradi Rasa/39
5	Chavyadi Lauha	-	3 Masha–1/2 Tola	Parinamshoola, Guda shoola, Hridshoola	Avaleha	Part-1 Chakaradi Rasa/88
6	Trikrayadi Lauha (1)	-	-	Parinamshoola, Shoola	Leha	Part-1 Takaradi Rasa/174
7	Trikrayadi Lauha (5)	Shoolahara Anupana	1-2 Masha	Shoola	Churna	Part-1 Takaradi Rasa/178
8	Triphala Lauha (2)	Dugdha	-	Shoola	Churna	Part-1 Takaradi Rasa/226
9	Triphala Lauha (Bruhata)	-	1-2 Tola	Parinamshoola, Dvandvajashoola, Sannipatajshoola	Leha	Part-1 Takaradi Rasa/228
10	Triphala Lauha (11)	-	1-3 Masha	Parinamshoola, Shotha	Leha	Part-1 Takaradi Rasa/235
11	Dandi Lauham (2)	-	-	Shoola, Udararoga	Paniya	Part-1 Takaradi Rasa/287
12	Dhatri Lauham (2)	-	-	Madhya Vishtambha Ante – Parinamshoola, Amlapitta	Avaleha	Part-1 Takaradi Rasa/348
13	Dhatri Lauham (3)	-	-	Adi- Vatapitta Vyadhi Madhya Vishtambha Ante Shoola, Pandu	Churna	Part-1 Takaradi Rasa/349
14	Dhatri Lauham (4)	Dugdha	1 Tola	Parinamshoola, Annadravashoola, Sarvashoola	Leha	Part-1 Takaradi Rasa/350
15	Panchanga Lauham	Madhu, Ghrita	1 Masha	Shoola, Mandagni	Leha	Part-2 Pakaradi Rasa/29

Sr. No.	Formulation Name	Anupana	Dose	Indication	Dosage Form	Reference
16	Pathyadi Lauham (2)	Madhu, Ghrita	1 Masha	Tridoshaja Parinamshoola	Churna	Part-2 Pakaradi Rasa/82
17	Pathyadi Lauham (3)	-	1 Masha	Parinamshoola	Leha	Part-2 Pakaradi Rasa/83
18	Pradarantaka Lauham (1)	Sharkara, Madhu, Ghrita	1 Masha	Kukshishoola, Katishoola, Yonishoola	Gutika	Part-2 Pakaradi Rasa/247
19	Pradaradi Lauham	Kushamula Paya	3-6 Ratti	Kukshishoola, Katishoola	Gutika	Part-2 Pakaradi Rasa/253
20	Lauha Guggulu (1)	-	1 Masha	Parinamshoola	Avaleha	Part-2 Yakaradi Rasa/277
21	Lauha Gutika	-	3 Masha	Parinamshoola	Gutika	Part-2 Yakaradi Rasa/279
22	Lauha Parpati	-	3-6 Masha	Shoola, Udararoga, Grahani	Gutika	Part-2 Yakaradi Rasa/281
23	Lauha Yoga (4)	Ushna Jala	6 Ratti	Ekanga – Sarvanga Shoola	Churna	Part-2 Yakaradi Rasa/287
24	Lauha Yoga (7)	-	2 Masha	Sarvashoola	Churna	Part-2 Yakaradi Rasa/290
25	Lauha Sara Kalpa	Takra	-	Parinamshoola, Shoola, Grahani	Churna	Part-2 Yakaradi Rasa/306
26	Lauha Amrutam (1)	Ghrita, Madhu	1 Masha (For 3 days, increase 1 Ratti everyday) (Max. 1 Tola)	Shoola, Parinamshoola, Amlapitta	Churna	Part-2 Yakaradi Rasa/313
27	Lauha Amrutam (4)	Ghrita, Madhu	1-4 Masha	Paktishoola	Churna	Part-2 Yakaradi Rasa/316
28	Lauha Amrutam (5)	-	1 Masha	Shoola, Parinamshoola	Churna	Part-2 Yakaradi Rasa/317
29	Vacha Lauham	Ghrita, Madhu	2-4 Ratti	Parinamshoola	Churna	Part-2 Yakaradi Rasa/349
30	Vidanga Lauham (1)	-	2 Masha	Shoola, Visuchika, Mandagni	Churna	Part-2 Yakaradi Rasa/515
31	Vaishvanara Lauham (1)	-	2 Masha	Sarvashoola	Churna	Part-2 Yakaradi Rasa/623

Sr. No.	Formulation Name	Anupana	Dose	Indication	Dosage Form	Reference
32	Sharkara Lauham (3)	-	1 Masha	Sarvashoola	Churna	Part-2 Shakaradi Rasa/68
33	Saptamrutam Lauha (1)	Madhu, Ghrita, Godugdha	1 Masha	Shoola, Amlapitta	Churna	Part-2 Shakaradi Rasa/294
34	Sarvatobhadra Lauham (1)	-	1-3 Masha	Paktishoola, Kukshishoola	Leha	Part-2 Shakaradi Rasa/318
35	Sarvatobhadra Lauham (2)	Madhu, Ghrita, Godugdha	1-3 Masha	Shoola	Leha	Part-2 Shakaradi Rasa/319

DISCUSSION

Lauha Kalpa are important herbo-mineral formulations of Ayurveda in which Lauha Bhasma constitutes the principal therapeutic component. The present review identified 35 Lauha Kalpa indicated for various forms of Shoola, highlighting that the classical application of iron-based formulations extends beyond their commonly recognized role in Pandu and related disorders. The diversity of indications suggests a broader therapeutic utility in gastrointestinal and pain-related condition.

Analysis of pharmaceutical characteristics revealed that Lauha Kalpa used for Shoola are found in different dosage forms such as Churna (powders), Leha/Avaleha (semisolid confectioneries), Gutika (pills), Paniya (liquids for oral use), and specialized formulations such as Parpati. Churna was the most frequently encountered dosage form, followed by Leha/Avaleha, indicating a preference for formulations that facilitate prolonged gastrointestinal contact and absorption.¹⁰

The proportion of Lauha Bhasma varied considerably among formulations, ranging from 0.9% to 99.99%, although nearly half contained approximately 50% Lauha Bhasma. (table no.2)

Table 2: Details of percentage of Lauha Bhasma in Lauha Kalpa mentioned in Rasayogasagara

Sr. No.	Formulation Name	Percentage of Lauha Bhasma
1	AmrutLauha	7.07%
2	Eranda Lauha	50%
3	Krushnadya Lauha	33.33%
4	Chatuhsama Lauha	3.57%
5	Chavyadi Lauha	12.69%
6	Triktrayadi Lauha (1)	11.11%
7	Triktrayadi Lauha (5)	50%
8	Triphala Lauha (2)	50%
9	Triphala Lauha (Bruhata)	17.12%
10	Triphala Lauha (11)	22.22%
11	Dandi Lauham (2)	50%
12	Dhatri Lauham (2)	2.68%

Sr. No.	Formulation Name	Percentage of Lauha Bhasma
13	Dhatri Lauham (3)	44.44%
14	Dhatri Lauham (4)	0.5% (With Mandura – 16%)
15	Panchanga Lauham	20%
16	Pathyadi Lauham (1)	33.33%
17	Pathyadi Lauham (3)	33.33%
18	Pradarantaka Lauham (2)	4.54%
19	Pradaradi Lauham	0.9%
20	Lauha Guggulu (1)	26.31%
21	Lauha Gutika	21.42%
22	Lauha Parpati	10.25%
23	Lauha Yoga (4)	99.99%
24	Lauha Yoga (7)	33.33%
25	Lauhasara Kalpa	65.30%
26	Lauha Amrutam (1)	1.92%
27	Lauha Amrutam (4)	100%
28	Lauha Amrutam (5)	75%
29	Vacha Lauham	33.33%
30	Vidanga Lauham (1)	25%
31	Vaishvanara Lauham (1)	25%
32	Sharkara Lauham (3)	25%
33	Saptamrutam Lauha (1)	33.33%
34	Sarvatobhadra Lauham (1)	11.11%
35	Sarvatobhadra Lauham (2)	13.75%

Such variation suggests that Lauha Bhasma serves different therapeutic purposes depending on the formulation, either as a major active ingredient or as a catalytic component acting synergistically with herbal constituents.

Triphala emerged as the most commonly incorporated ingredient. Its frequent inclusion may be attributed to its established role in Lauha Shodhana and Marana processes as well as its pharmacological properties. Constituents such as ascorbic acid and polyphenols are known to influence iron metabolism and bioavailability.¹¹ Furthermore, the mild laxative action of Triphala¹² may counterbalance the constipating effects associated with iron preparations, thereby improving tolerability and therapeutic outcomes.

Ghrita and Madhu were the most frequently prescribed Anupana. Their Yogavahi, Rasayana, and digestive-supportive properties may enhance drug delivery and therapeutic efficacy. Disease-specific Anupana such as Takra, Dugdha, Ushna Jala, Narikela Jala, and Kushamula Paya further indicate a tailored therapeutic approach based on Dosha predominance and disease pathology.

The commonly prescribed dose across formulations ranges from 1–3 Masha (750mg–2.25gm). Certain formulations specify gradual dose escalation (e.g., Lauha Amrutam)¹³, allowing doses up

to 1 Tola (10 gm), indicating long-term or Rasayana utility. Among the formulations administered in ratti (125mg) dosage, this formulation contains additional Bhasma (Panchanga Lauham)¹⁴ components and is characterized by a comparatively higher proportion of Lauha Bhasma (Lauha Yoga).¹⁵

Analysis of indications reveals that Shoola is the most frequently mentioned clinical condition. Variants such as Parinamashoola, Kukshishoola, Hridshoola, Sarvashoola, Katishoola, and Yonishoola are repeatedly indicated either singly or in combination. Associated conditions like Amlapitta, Grahani, Mandagni, Udararoga, Shotha, and Pandu are also observed which denotes Lauha Kalpa generally act on gastrointestinal tract diseases.

Probable mechanism of action in Udarashoola condition:

Udarashoola is primarily associated with derangement of Vata Dosha, often accompanied by Mandagni, Ama formation, and disturbances of gastrointestinal function.¹⁶ The first treatment goal is to control Vayu as Vayu is Ashukari in nature.¹⁷ Rasaushadhi like Lauha Kalpa is fast acting formulation as it contains many metal minerals and mercury based compounds.¹⁸ As Lauha is the main component in Lauha Kalpa, having Madhur Vipaka, Guru,¹⁹ best Deepana, Prabal Shoolanashak (removal of severe pain) and Udararoga nashan²⁰ properties, it acts directly on Vayu, and the majority of Lauha Kalpa reviewed in the present study contain Lauha Bhasma along with Deepana-Pachana and Vatanulomana drugs such as Triphala, Trikatu, Chitraka, Vidanga, and Vacha. These ingredients may collectively enhance digestive fire (Agni), facilitate Ama Pachana, improve gastrointestinal motility, and normalize Vata, thereby reducing abdominal pain and associated digestive symptoms. In conditions such as Parinamashoola and Annadravashoola, the Pittashamaka and Agni-balancing properties of these formulations may further contribute to symptomatic relief.

Physicochemical studies have demonstrated that Lauha Bhasma predominantly contains iron oxides, mainly hematite (Fe_2O_3) and magnetite (Fe_3O_4), with particles extending into the micro and nano-scale range.²¹ Experimental investigations have reported antioxidant, anti-inflammatory,²² analgesic²³ and antimicrobial activities²⁴ of Lauha Bhasma and related iron-based preparations. These properties may help attenuate gastrointestinal inflammation, oxidative stress, and pain perception associated with abdominal disorders. Furthermore, iron oxide nanoparticles have shown inhibitory activity against multidrug-resistant *Helicobacter pylori* under experimental conditions,²⁵ providing a possible scientific basis for the traditional use of certain Lauha Kalpa in disorders resembling peptic ulcer disease and hyperacidity. However, direct evidence confirming similar effects of classical Lauha formulations remains limited.

Therefore, the therapeutic efficacy of Lauha Kalpa in Udarashoola may be attributed to a synergistic combination of Agni-deepana, Ama-pachana, Vatanulomana, antioxidant, anti-inflammatory, analgesic, and potential antimicrobial actions. Nevertheless, further pharmacological and clinical studies are required to elucidate the precise mechanisms and establish their role in specific gastrointestinal disorders. (fig. 1)

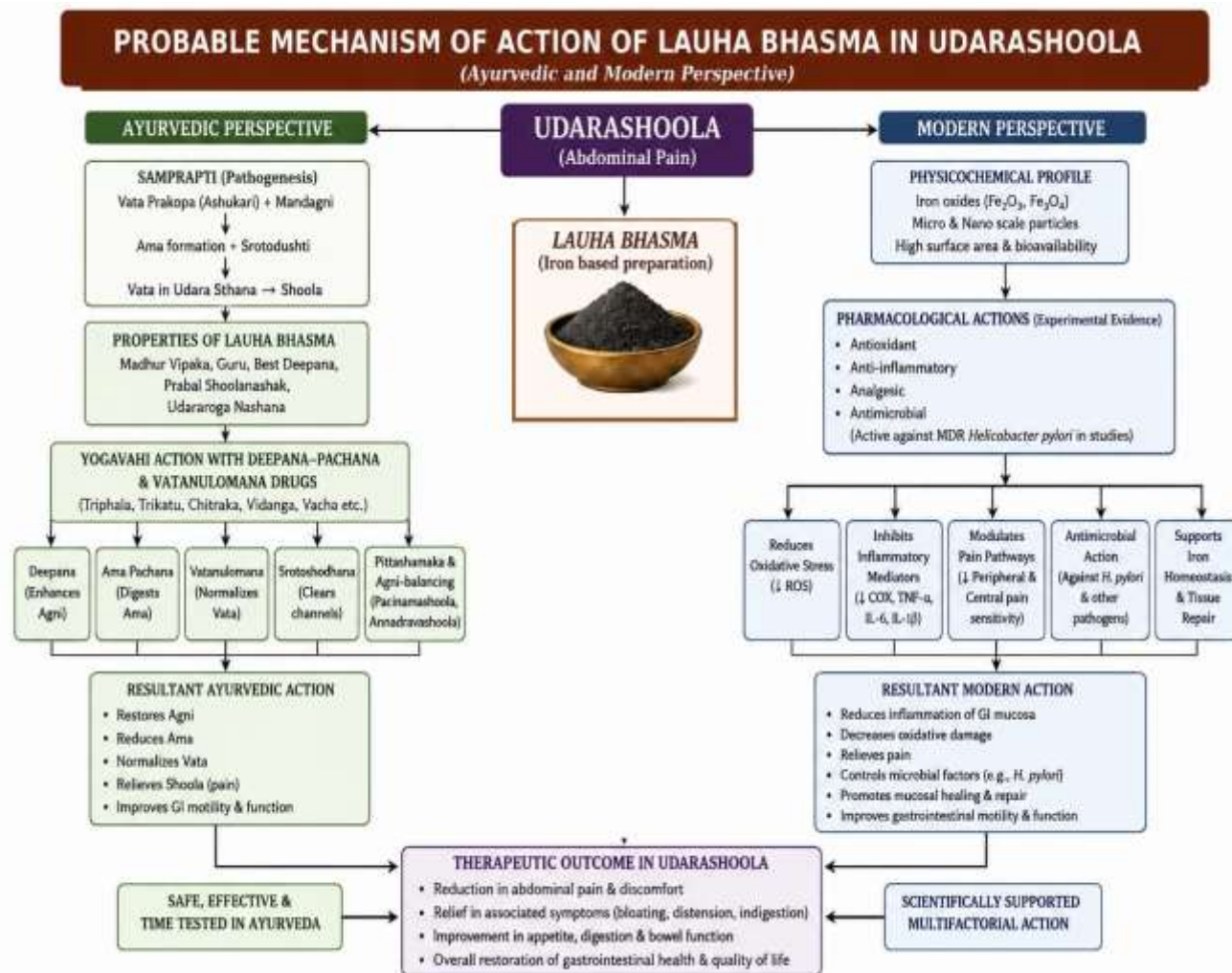


Figure 1: Illustration of Probable Mechanism Action of Lauha Bhasma in Udarashoola.

CONCLUSION

The review identified 35 Lauha Kalpa indicated for Udarashoola and related Shoola disorders in Rasayogasagara, highlighting a broader therapeutic scope of Lauha-based formulations beyond Pandu and allied conditions. Their diverse composition, dosage forms, and Anupana suggest a rational Ayurvedic approach to managing abdominal pain and digestive dysfunction. Further pharmaceutical, pharmacological, and clinical studies are needed to validate their therapeutic potential and support evidence-based clinical use.

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